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Chapter 14: From impossibility to necessity: Reflections on moving to emergency remote university teaching during COVID-19

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Abstract

This chapter is an autoethnographic retrospective reflection on three university-level Information Systems courses transitioning from face-to-face teaching to online teaching during the COVID-19 pandemic lockdown. This retrospective reflection contributes to the research and teaching of courses that require: 1) increasing student engagement through new methods such as gamification of learning tasks, 2) face-to-face tutoring and supervision sessions, and 3) laboratory work done by groups of students, with hands-on work with a master-apprentice approach, and with external customers. Furthermore, the chapter compares the experiences of adapting these courses to the emergency remote-teaching mode with the ongoing course digitalization and online teaching work done over the past two decades. Finally, it touches upon issues of empowerment and equality in emergency remote teaching and discusses implications for research and practice.

Introduction

The COVID-19 pandemic has had an unprecedented effect on education on a global scale, forcing universities and other institutions of higher education to move in a record time from normal everyday teaching to emergency online teaching. While lecture-based courses may have already been moved partially online to

provide continuous learning even before the pandemic, laboratory-based courses may have been considered impossible to convert even partially into online courses. Therefore, the pandemic compelled educators worldwide to overcome previously impossible challenges in a very short timeframe.

While there have been crises on local levels (floods, minor epidemic outbreaks, irruptions of violence, etc.) affecting different educational institutions to such an extent that emergency measures may have had to be implemented, nothing comes close to the COVID-19 pandemic of 2020. The countermeasures against the virus forced universities and other institutions of education to move almost overnight from normal everyday teaching to providing stopgap online teaching as best they could. This transition was, in most cases, done in a record time and with practically no advance planning.

This book chapter is based on the author's personal experiences and struggles in the spring term of 2020, during the COVID-19 pandemic lockdown at University of Oulu, Finland. Offering a retrospective reflection on the sudden change in the teaching modality—from face-to-face to online teaching—in three university-level Information Systems courses as a result of the COVID-19 pandemic lockdown measures, the chapter investigates the student experience resulting from this change and reflects on the differentiated teaching in these conditions (c.f. Tulbure, 2011). The chapter consists of a retrospective reflection on three courses taught during that time: 1) *Information Systems*, a course with a traditional lecture, exam, and exercise structure, 2) *User Interface Programming*, a course with no lectures and with face-to-face assignment supervision and tutoring sessions, and, most interestingly, 3) *Usability Testing*, a course where groups of students conduct usability tests in a laboratory for applications, systems, and services provided by external customers. The aim of the chapter is to provide a retrospective outlook on these courses and to examine how the COVID-19 pandemic lockdown

forced them into an unplanned emergency remote-teaching mode. The objective is to provide insights and guidelines for teachers with similar courses, and to identify the challenges and potential pitfalls as well as future research topics. These insights and experiences will help teachers and institutions of higher education to prepare for and cope with the next emergency that may necessitate transitioning to emergency remote teaching, and they will help as well in the systematic transitioning of face-to-face teaching to online teaching.

While institutions of higher education especially, such as University of Oulu in Finland, have been making a systematic transition to online teaching for over two decades, online content has been largely complementing face-to-face teaching by providing additional pedagogical solutions. As a result of the COVID-19 emergency measures, however, educators have had to convert existing courses to online teaching quite hastily, far removed from the ideal pedagogic planning situation in which it is possible to focus on the pedagogical potential of online teaching and to identify how the latter could best support overall learning (Mohmmed et al., 2020). The next section presents the background and methodology of the study.

Methodology

This chapter applies autoethnographic retrospective reflection to three university courses as its main research methodology. Autoethnography combines autobiography and ethnography into a holistic approach for research and writing that systematically presents the author's personal experiences in order to understand, analyse, and study experiences, cultures, and practices (Ellis et al., 2011). This approach positions research as a political, socially just, and socially conscious act that challenges traditional methods of research and of representing others (Spry, 2001; Adams & Holman Jones, 2008). Therefore, autoethnography as a research method includes both the research process itself and the results of that research process (Ellis et al., 2011). In

autoethnographic studies, researchers utilise their existing experience by describing and analysing case studies in order to make them useful to others through 1) developing a better understanding of complex situations, 2) making it possible to anticipate future scenarios and possibilities, and 3) acting as examples that can be learned from and highlighting aspects that might otherwise go unnoticed (Duncan, 2004).

The author was well positioned to conduct this autoethnographic study as the author was teaching these courses during the COVID-19 pandemic lockdown in March 2020, witnessing first-hand the transition to emergency remote teaching and the struggles of teachers, students, and administrators. Retrospective reflection via autoethnography has been used in many fields to gain insights from previous experiences, such as in higher education or in the library and medical fields (c.f. Schon 2010; Stefl-Mabry et al., 2012; Tsingos-Lucas et al., 2016).

In this chapter, the experiences, struggles, and outcomes arising from teaching these three courses act as cases, which are contrasted with the literature and with the author's own more than 20 years of experience in higher education teaching and personal research. Moreover, the author has completed university pedagogic studies, related various teaching methods and their results to their underlying pedagogic theories, and sampled different pedagogic methods such as the flipped classroom, the snowball discussion, or the panel discussion. The author, in other words, has always been willing to experiment with new teaching methods in both offline and online education. Only one course, the Usability Testing course, was previously considered impossible to turn into an online course. However, this was not because of resistance to change or because of extra effort that would be required but because it was thought that the learning outcomes of the course would suffer considerably if there were no hands-on supervision in the lab. This experience gave the author a valuable perspective for an autoethnographic retrospective reflection on the events that transpired in the early spring of 2020.

Timeline of events

News about the COVID-19 pandemic seemed distant at the University of Oulu, Finland until the middle of March 2020, when the university made a very rapid decision to move all teaching online and to close its premises until further notice. The various levels of university acted in unison. First, the degree programme committee for Information Processing Science made a unanimous decision to recommend that all courses in its curriculum be moved to emergency remote teaching immediately. Very soon, the faculty committee made a similar decision. And, within two days, the university made the decision to close the university completely, to stop all forms of face-to-face teaching, and to prohibit all physical presence on campus. Thus, there were no delays or conflicting messages, with all levels of university administration acting swiftly to protect the university staff and students from the threat of the pandemic.

As universities around the world were suspending their classes, they were frantically trying to find ways to do so without stopping learning (c.f. Zhang et al., 2020). Furthermore, decisions to move from contact teaching to some form of online teaching may have been necessary, but these decisions may not have been fully in line with the everyday realities of teachers and students, and decisions alone do not necessarily change the existing realities (c.f. Aguliera & Nightengale-Lee, 2020). The teachers and students may not have the support they need for remote teaching and learning in the form of hardware, software, network access, best practices, etc (c.f. Selwyn, 2010). Teachers cannot teach and students cannot learn if the teaching is moved online but there is a lack of computers, connections, skills, tools, quiet working spaces, etc.

In the case of University of Oulu, however, the university administration, IT support, teaching support, and student support acted remarkably fast, providing immediate information, support, and care to teachers and students. IT support increased the

capacity and access to online tools (e.g., Zoom, Teams) and provided new network proxies so that teachers and students could still access university information systems that were limited to the university's network. The administration made quick decisions on issues such as arranging maturity exams, which are mandatory by law for graduation. Laptops, headphones, and monitors were given to teachers needing them at home. The teachers, support staff, and administration did everything they could to provide students with as many learning materials, and as much care and sense of normalcy, as possible, achieving levels of flexibility and decision-making speed previously thought impossible. During the summer, students were hired to do remote intern work in teaching and research support, since local companies no longer hired students as summer interns.

During the COVID-19 lockdown, the University of Oulu was perhaps in a better position than many other institutions of higher education, since some form of training as well as technological and management support for online teaching had been provided for over 20 years. Online education and open courses were already integrated into the educational strategy of the university. However, the strategic development of online teaching competencies, skills, support, and pedagogy over a long period of time and in selected voluntary courses is very different from having to convert all courses online overnight. The experiences and insights gained from transitioning to emergency online teaching due to COVID-19 and then from transitioning into more a systematic online teaching mode will help in future events requiring emergency remote teaching at the same time as they will highlight the hidden inequalities and power differences that should be taken into account in normal online teaching as well. Therefore, next we take a look at the difference between planned online education and emergency remote teaching.

Emergency remote teaching

Hodges et al. (2020) and Mohmmed et al. (2020) define *emergency remote teaching* as a sudden interim shift of teaching from contact teaching to online delivery as a result of a catastrophic event. COVID-19 made teachers scramble to figure out how to shift their teaching from the normal everyday mode to emergency remote teaching (Hodges et al., 2020). There have been great ambiguity and disagreement among teachers and educational administrators regarding the core content or the role of emergency remote teaching and regarding the implications of a prolonged state of emergency for education (c.f. Zhang et al., 2020; Aguliera & Nightengale-Lee, 2020). Furthermore, there can be significant differences among teachers in their levels of online skills, competencies, and preparedness (Trust & Whalen, 2020). Some teachers may have previously already embraced the possibility of online teaching, developing their own capabilities and planning their courses accordingly, while other teachers may have been more reluctant. Nevertheless, the sudden change into emergency remote teaching was unprecedented.

This sudden change due to an emergency is in stark contrast to the slow and deliberate introduction of online teaching as part of the overall higher education curriculum development and course planning, which takes a much longer time (Hodges et al., 2020). In theory, online teaching can be more convenient, providing the possibility of vibrant and dynamic teaching and learning environments including in times of emergency (Mohmmed et al., 2020). However, the reality is that, when teachers have to quickly convert the curriculum to an online mode as a result of immense catastrophe, they cannot focus on aspects such as online pedagogy (Mohmmed et al., 2020).

Emergency remote teaching operates outside of the normal pedagogic principles and best practices, with the assumption that the catastrophe will abate soon and the situation will go back to normal (Bozkurt & Sharma, 2020). Then, education reverts back to

its original delivery mode and emergency remote teaching will have acted merely as a temporary stopgap, its duration short enough not to have caused too much trouble (Mohmmed et al., 2020). Therefore, there has not been much research on various aspects of long-term emergency remote teaching, such as differentiated learning and teaching, or the effect of differences in digital skills and availability of technology on equity among students. However, the COVID-19 pandemic has already been anything but short or local and, currently, nobody knows when the situation will go back to normal and education can return to its face-to-face mode (Bozkurt & Sharma, 2020). Therefore, it can be argued that the lessons learned from the COVID-19 pandemic will provide valuable insights on how teaching should be transferred into emergency remote teaching mode on both the local and the global levels, and how prolonged emergency remote teaching should be transferred into a more systematic and pedagogy-driven online teaching mode. Furthermore, there are hidden factors such as inequalities and digital divides among students and teachers, which must be taken into account in both emergency remote teaching and online teaching (Selwyn, 2010). Even the best pedagogic methods and best-designed courses are for nothing if the students do not have the skills or technological, social, or physical means to access this teaching or if they get inadvertently marginalised due to the way online teaching is organised (c.f. Selwyn, 2010).

Previous instances of emergency remote teaching have been short in duration and local in perspective. For example, there have been different forms of natural disasters, floods, conflicts, and violence that necessitated the move from normal teaching to emergency remote teaching (Affouneh et al., 2020). The closest equivalent to COVID-19 in recent history might have been the swine flu, but its effects to education were relatively brief and local (Young, 2009; Trust & Whalen, 2020; Mohmmed et al., 2020). Therefore, the lessons learned from the swine flu outbreak are not directly applicable to the COVID-19 situation. As

a result, there were no procedures or best practices available, and the teachers and educational administrators had to act largely on a wing and a prayer, just trying to do their best. Also, the previous experiences with short term emergency remote teaching did not have the time to address the situation using differentiated teaching strategies in order to take into account different learning and teaching styles (e.g., Tulbure, 2011). Furthermore, moving to emergency remote teaching only exacerbates the existing inequalities that are present in the educational context, which has resulted in calls for taking into account educational equity also in the emergency remote teaching context, since introducing emergency remote teaching does not provide students with digital literacy, competencies for independent study, or technical means for accessing online learning materials (e.g., Aguliera & Nightengale-Lee, 2020; Czerniewicz et al., 2020; Zhang et al., 2020).

The COVID-19 situation puts students and teachers in a very difficult situation in many ways. They are expected to have access to hardware, software, skills, and competencies for independent online learning, as well as to immediate and safe physical, technological, and social learning environments in their homes (c.f. Selwyn, 2010). To add to an already difficult situation, some students and teachers may live in cramped conditions, which are less than ideal for studying and coursework, and they may have to compete with other family members for access to computers and internet.

The effect of emergency remote teaching on equality among students and the general empowerment of students in light of the risks of technology-based or skill-based inequalities can also be analysed through the concept of empowerment, where the agency and empowerment of the individual are considered very important (c.f. Whittle et al., 2020; Rajanen & Iivari, 2019; Rajanen & Iivari, 2015). In the context of education, empowerment

means, in general terms, transferring some of the decision-making power and responsibility from the teacher to the student in the educational relationship (Lawson, 2011). The purpose of empowerment is to build students' agency, independence, and capabilities so that they are able to act as self-learners who reflect on their own skills and learning. The flipped classroom can be considered a method for empowering learners with the potential for equalising the power differentials (Yujing, 2015). It can be argued that taking into account the viewpoint of student equality and empowerment in the educational context would help in developing courses and practices that can better support learning during both emergency remote teaching and regular online teaching.

Another potential method for empowering students is the use of gamification. Gamification means the use of game-like elements, such as points, in non-gaming contexts (Deterding et al., 2011; Huotari & Hamari, 2012), for instance in education (Cheong et al., 2013; Cheong et al., 2014). Gamification has many potential benefits in any context, including in the context of education, when it is provided with good usability (c.f. Rajanen & Rajanen, 2017). Gamification in the educational context usually means using points, badges, and leader boards for learning tasks in order to increase student engagement. However, these learning tasks have to be specifically designed to incorporate gamification elements and to suit all learning styles. Just adding points, badges, and leader boards into existing teaching does not make it gamified, while introducing any kind of competitive elements can have a detrimental effect on students whose learning style is not driven by competition. The author piloted gamified learning tasks to a small extent in one of the courses before the COVID-19 pandemic. In the next section, the author conducts a retrospective reflection on the courses taught during the COVID-19 lockdown in the form of emergency remote teaching.

Retrospective reflection

The following sections present a retrospective reflection on three very different kinds of courses, which were converted to emergency remote teaching as a result of the COVID-19 pandemic lockdown measures in 2020.

Case 1: Information Systems course

The Information Systems course was taught in the autumn of 2020 with 94 enrolled students. This course was a first-year bachelor-level course with an assignment and an exam. The purpose of this course was to provide students with an overview of the importance of information systems design and development, as well as to introduce general processes and methods. This course was the most traditional of the three courses discussed in this chapter, consisting of an exam, face-to-face lectures, and mandatory exercises. The students had to pass an exam and complete an assignment either in team exercises or individually. The individual assignment was provided specifically for those students who, for example, worked and could not attend the exercise classes where the assignment was done in teams and under supervision. However, the individual assignment had the same requirements as the assignment done in supervised exercises in teams, which was meant to encourage students to benefit from supervision during the exercises.

All course instructions and materials were provided in an online Moodle system, and assignment submission and evaluation were also done through this system. There had already been some online tasks assigned in Moodle that the students could do in order to compensate for the exam. Some of the students had already opted to do the exam-replacing tasks instead of the exam before the COVID-19 lockdown and before emergency remote teaching was in place.

The opening lecture for the course was held in a classroom, in case there were students who had not yet registered for the course and therefore had not received the messages about moving to online-only teaching. However, no students were present at the opening lecture and there were no inquiries from the students about the lectures or exercises, which meant the transfer to online-only teaching was communicated successfully.

As mentioned earlier, the course already provided some possibilities of passing the course through online methods, even before the COVID-19 lockdown. To enable students to complete the exam element of the course and also to boost student engagement in the course during that difficult time, the exam was substituted entirely with a series of gamified small learning tasks. In these tasks, students were asked to define core concepts in information-systems design and development, as well as to interpret various design models. Therefore, this course provides an interesting case of a traditional course being moved completely online and gamified. There were 14 small learning tasks, each consisting of one to five questions. On the Moodle environment course page, students could see the number of learning tasks they had completed with more than zero points and the total number of points they had accumulated so far. Therefore, students could follow their progress and decide how many learning tasks they would still have to do in order to pass the course or to achieve the grade they wanted. The students could safely try the learning tasks as many times as they wanted, as the highest score achieved from each task was considered valid for grading. This gamification approach allowed the students to safely accumulate points towards the grade that they wished to gain at their own pace and using their own personal learning style. This points-centric gamification approach was selected because badges and leader boards were not considered suitable for all learning styles, as many students who are not competitive by nature may want to do things in their own pace and through intrinsic motivation

(Tsay & Kofinas, 2018). Therefore, the number of points the students were accumulating was not visible to anyone other than the individual students and their teachers. These points acted as a way for the deep learners to keep track of their learning progress and for the more competitive students to compare their points in their personal communications, in the way they would compare their exam results (c.f. Tsay & Kofinas, 2018).

The purpose of this gamification of learning tasks was to increase the level of student engagement in the course and to provide them with small incremental tasks that they could accumulate and have a visible progress. This is a departure from traditional exams, where students have just one opportunity to provide the correct answers.

As a result of COVID-19 emergency remote teaching, the learning tasks and the assignment were scaled down, in order not to overload students who are already facing difficult situation with extra work. The learning tasks and the assignment were reduced to the bare minimum, containing the core content of the course.

Case 2: User Interface Programming course

The User Interface Programming course was taught in the spring of 2020 with 113 enrolled students. This was a third-year bachelor-level course that combined two topics taught separately in previous courses: user-interface design and user-interface development. Since the course builds on previous courses on these topics, it had no lectures. Students passed the course through an assignment where they showed their skills in designing and coding a system with good user interface and usability. The course had non-mandatory tutoring sessions, where students could get help with their assignment and where different parts of the assignment were explained.

All of the course instructions and materials were provided in an online Moodle system, and the assignment submission and evaluation were also done through this system. In this course, students could freely choose either to participate in the exercises or to complete the assignment online independently. The course started normally, in January 2020, and it had weekly supervised tutoring sessions in the classroom until the lockdown. After the lockdown, the tutoring sessions were moved online. Therefore, this course provides an interesting case of a semi-online course with a strong tutoring and face-to-face teaching element, which had to be converted to emergency remote teaching during the COVID-19 lockdown.

The emergency remote teaching was conducted through Zoom. The teachers in the course decided to move the assignment supervision sessions from the classroom to Zoom but to keep them at the same times they were originally scheduled. This was done in order to keep as much normalcy as possible for the students and to avoid doubts, confusion, or miscommunication regarding when exactly the online sessions were taking place. The online sessions were advertised via the course Moodle system and the student email list. However, there were very few students attending the Zoom sessions.

When comparing student attendance in classroom tutoring sessions to the Zoom sessions, there was a dramatic reduction in student attendance. On average, 50% to 75% fewer students attended the Zoom sessions. Previously, many students had reserved the classroom sessions, when there was help available in case of need, as the time for doing the assignment. After the lockdown, the few students attending the Zoom sessions came only for a very brief time to ask specific questions and then left completely. Furthermore, in classroom exercises students were actively discussing and helping each other, presenting their ideas to other students in attendance, and using their fellow students

as user representatives in prototype testing. This active participation was completely absent in the Zoom sessions. The transition from classroom to online teaching was also reflected in the number of returned assignments. Out of 113 students, only 57 returned a completed assignment before the end of the course, with more than the usual number of students having their assignment rejected due to insufficient quality.

We can only speculate about the reasons for the students' absence from the online sessions or for the limited number of returned assignments. One reason might be that the students may have been too preoccupied at the time with COVID-19 in general, procuring the necessary supplies and taking care of their family members; or they may have been overwhelmed by the rapid introduction of emergency remote teaching.

During the teaching conducted in normal conditions, the students had a mobile app where they could see the times and places for lectures and assignments. In emergency remote-teaching conditions, however, those schedules were not valid anymore and the students had to find out about online teaching and supervision session from different sources, such as email or the Moodle workspaces of different courses. As the teaching was moved online, many courses abandoned the schedules for lectures and exercises, which might have led the students to concentrate more on recorded lectures and independent assignments instead of real-time lectures and supervision sessions.

Case 3: Usability testing course

The Usability Testing course was held in the spring of 2020 with 36 students enrolled. This course was a master-level course with the aim of giving students a complete outlook on the theoretical and practical aspects of team-based usability and user-experience testing process, from planning to testing and reporting of the results. The course had real customers from various organizations who wanted their software, information systems, apps,

or games to be tested by real users in the usability-testing laboratory to improve the design. The presence of real external customers made it important to verify that the student teams planned, executed, and reported their usability testing with the proper quality.

The other two courses mentioned above already incorporated some possibilities of passing through online methods. However, the Usability Testing course was always thought to be impossible to teach satisfactorily through online or remote teaching methods due to the very hands-on characteristics of the usability-testing method, which highlights the importance of planning, setting up, observing, and reporting the tests. These are very practical skills that are grounded in understanding the related theories, and thus they can only be learned by doing. Therefore, until recently it was thought that the only way to give students these skills was to conduct the tests in a laboratory setting at the university under direct supervision and guidance of skilled staff. This setting was similar to the traditional master-apprentice approach.

Furthermore, because the test cases in this course are real, provided by external customers, it was considered very important that the student groups do their work properly and provide these external customers with reliable test reports, which would then be used to improve the system. Therefore, this course provided an interesting case of a course that was previously deemed impossible to teach online but that had to be successfully converted to an online mode within a week.

Initially, face masks were considered for conducting the usability testing in the laboratory, but the total closure of the campus made it impossible. The theoretical aspects of the course were delivered as recorded lectures through YouTube. The student teams worked together with the author and their customers in order to find the best ways to conduct usability testing without

access to the laboratory. This gave the students agency and empowered them to find the best procedures that would work for their teams, as both the author and the customers recognised that the teams themselves knew best how they could conduct the usability tests in practice. The author set the general goals for testing, the customers set the specific goals for their cases, and the student teams were given a free hand to find ways of achieving these goals. Some teams, especially those who were testing mobile applications, conducted the usability tests as field tests, in the relative safety of the outdoor environment. Other teams utilised different forms of remote usability-testing tools and managed to conduct the tests while team members and the users testing the systems were all located in different places.

The next section discusses the experiences and outcomes from the emergency remote teaching of these three courses.

Experiences and outcomes

When the COVID-19 lockdown was imposed and the university campus was closed completely until further notice in the middle of March 2020, the importance of providing course content and study materials online as soon as possible was identified. The teachers and university administrators were in agreement that it would be best to maintain normalcy as much as possible in order to alleviate student stress, especially at the beginning of the lockdown. The lockdown meant that there were no exams, lectures, exercises, laboratory work, or face-to-face supervision of any kind. Therefore, being in touch with the students and not leaving them alone in a difficult situation were considered important. The lack of support for teachers from school administrations has been identified in the literature (Trust & Whalen, 2020), but that was not a problem here, as all the support personnel made improvements at a fast and steady pace. Also, the university administration was in constant communication with the teachers, providing general emergency remote teaching advisory and policy for the teachers. This was in contrast to cases reported in the

literature, where teachers felt abandoned in the middle of the COVID-19 crisis (c.f. Aguliera & Nightengale-Lee, 2020).

At the beginning of the lockdown, and before more proxy services and connections were added by the university IT services, internet connections to and within the university network were crowded, slow, and intermittent, which made it difficult for teachers and students to access course materials and other vital services such as library materials and university online services such as Zoom, Moodle, and other tools. That these aspects of emergency remote teaching were constrained by infrastructure and network crashes is also identified in the literature (c.f. Young, 2009; Zhang et al., 2020; Trust & Whalen 2020; Gares et al., 2020).

For teachers, the emergency remote teaching mode posed an immediate challenge to be solved, without any previous planning or resourcing. Typically, the teacher resourcing for courses and supervisions is done for normal conditions, for the work to be done in their own offices and with the tools that are already available at these offices. However, in emergency remote teaching all the resource planning goes out the window and teachers may have to spend considerably more time delivering lesser-than-intended content in less-than-ideal conditions. Adding to the challenges is the unprecedented uncertainty of the extent and duration of the COVID-19 pandemic measures, which makes it very difficult for teachers and administrators to do any kind of long-term planning and policy making. Traditionally, emergency remote teaching has been akin to extinguishing forest fires, where the focus must be on the most immediate threat until the danger abates. However, the COVID-19 pandemic has been like an unending inferno, where strategic planning is also needed.

In addition to the technical issues adding to teacher workload during emergency remote teaching, teachers may have different

amounts of training, capabilities, and attitudes toward online education and tools. This puts teachers who already have the skills and experience in online teaching in a much better position, while challenging and marginalising teachers who do not have this background (Aguliera & Nightengale-Lee, 2020). Furthermore, the usability of online teaching tools may not be optimal, which further adds to the challenges the teachers are facing because encountering usability problems when using a work-critical system reduces work efficiency, effectiveness, and satisfaction (Rajanen, 2006).

It is important that teachers do not neglect to communicate and coordinate deadlines in different courses during prolonged emergency remote teaching. It may be easier for teachers to forget during emergency remote teaching that students also have other courses at the same time, and that their course is not the only one their students are taking.

While teachers are overloaded during emergency remote teaching, so also can be the students. Usually, the curriculum is created so that the students do not have too many course deliverables at the same time. But overlapping learning tasks, deliverables, and other course activities may not be the first issue teachers consider and coordinate during emergency remote teaching. Therefore, students can get overloaded and even more stressed, which has a negative impact on their learning. When the author spoke with the students who were present in one tutoring session at the Information Systems course, trying to find out why there were fewer students present than usually, it was revealed that the students had five assignment deadlines in different courses during that same week, and the students were trying to prioritise and cope with this situation. In that kind of situation, the students did not see attending an online tutoring session as a priority.

In addition to increased student workload during emergency remote teaching, students also have different levels of experience

with online learning. Emergency remote teaching requires that students have existing capabilities for independent learning at their home and that, in addition to the necessary tools, they have a positive attitude toward learning (c.f. Hockings et al., 2018). Emergency remote teaching can provide some students with an excellent opportunity to become self-learners and to do the courses at their own pace and in their own timeframe. However, there are also students who are not as skilled in self-learning or setting their own schedules. If the student does not have the necessary attitude and capabilities for online learning, they may lack discipline and may become lazy and easily distracted, for example by cooking food while attending emergency remote teaching sessions (c.f. Zhang et al., 2020). Furthermore, in all kinds of emergency conditions, teachers and students may have to prioritise their personal needs and the needs of their families (such as taking care of the children, the elderly, and sick relatives) over teaching and learning (Trust & Whalen, 2020).

Normally, the students at University of Oulu have a mobile application that lists the times and places for course teaching. In normal conditions, this makes it easy for students to keep track of the lectures and exercises in their different courses and to remember to be active in the courses. However, emergency remote teaching changed all that, as now the course activities no longer followed any established schedule. This might further increase the risk of students falling out of their regular learning rhythms and rituals and of becoming more passive. Furthermore, there is much to be improved with regards to the usability of online learning tools, as poor usability causes inefficiency and errors even during normal learning conditions and does not help the stress students experience during emergency remote teaching (c.f. Rajanen, 2006).

Adding to the stress and difficulties experienced by teachers and students may also be the limited availability of the technological means for emergency remote teaching and learning (c.f. Young,

2009). The students and teachers may have noisy, cramped, or otherwise unsuitable conditions at home for work and study. Furthermore, many families might nowadays not have desktop computers at home at all, requiring the teachers and students to work in emergency conditions either with a laptop without a monitor, with a tablet computer, or with a mobile phone. This creates a challenging and complex working environment at home, which is less than appropriate for study and work (Zhang et al., 2020). Especially for teachers with limited access to hardware, software, and internet access, emergency remote teaching poses an extra challenge. These resources have typically been considered from an organisational point of view and, while they are seen as important for the quality of distant learning (c.f. Okamoto, 2013), the availability of these resources to teachers at their homes during an emergency has not been taken into account (Zhang et al., 2020).

In some families, there may be only one computer and/or a limited (e.g., slow, metered) internet connection. Teachers and students might also have only a mobile broadband internet connection or have only tablets and mobile phones at home. This creates a challenging condition for teaching and learning and can cause educational inequality (c.f. Selwyn, 2010; Trust & Whalen, 2020; Zhang et al., 2020). Furthermore, many already-marginalised families may not have internet access at all, which worsens the already existing inequalities (Aguliera & Nightengale-Lee, 2020). These educational inequalities in the emergency remote teaching context should be addressed through pedagogical and structural approaches (Aguliera & Nightengale-Lee, 2020). Removing the educational inequalities and aiming for educational equity are important for educational justice in general and in emergency conditions in particular (c.f. Selwyn, 2010; Czerniewicz et al., 2020). Furthermore, learners and teachers should be empowered and given agency, and important

issues such as equality and accessibility should be taken into account also during emergency remote teaching (c.f. Aguliera & Nightengale-Lee, 2020; Czerniewicz et al., 2020).

For example, lecture video recording, converting, editing, and uploading for online use requires having a fast computer at home with a good graphical processing unit to encode videos and depends on fast internet to upload large video files to online platforms. Furthermore, a good microphone and camera are also needed. The author knows of some cases where teachers had to make entire lecture videos with slides, or to make video and narration entirely with a smart phone, which meant having to spend much more time preparing this material than they would normally have to. Such stopgap measures increase the teachers' workload considerably. Creating slides, recording video and audio, and encoding and uploading content took considerably more time with only a mobile device than it would had taken with the appropriate hardware and software.

The next discussion focuses on the aspects and experiences specific to each of the three courses converted to emergency remote teaching.

Gamification of learning tasks

Games offer engaging and motivating experiences, which can be applied to non-gaming contexts in the form of gamification (Deterding et al., 2011; Huotari & Hamari, 2012). There have been studies showing that undergraduate students in particular have an especially positive perception of learning that incorporates elements of gamification (Cheong et al., 2013; Cheong et al., 2014). Gamification has been found to be particularly suitable for learning approaches compatible with social constructivism (Cheong et al., 2014). However, a properly designed gamification is vastly different from "pointsification," which is defined as superficially adding gamification elements to an existing pro-

cess without any practical impact (Cheong et al., 2014). Gamification could, therefore, be a powerful tool for teachers, but it should be designed carefully and implemented with good usability so that the goals of the gamification are reached (Rajanen & Rajanen, 2017) in a way suitable for all learning styles and for both intrinsic and extrinsic motivation.

The gamification of learning tasks proved to be a good way to engage students in learning both in times of emergency remote teaching and during normal times. The purpose of the gamification of learning tasks was twofold: to give students meaningful small tasks that they could do at their own pace and to the extent they wanted, and to help them remain constantly aware of how much they had to complete in order to pass the course—as well as to remind them that they could easily increase their grade by doing more of these online learning tasks or by redoing some of the tasks that they had done earlier in order to get a better score. The more competitively oriented students could compare their points in their private communication in the same way they would compare exam results, while the more deep-learning oriented students could use the points as a measurement of progress in their learning.

After the gamified online learning tasks were posted to the course Moodle workspace, there were some students who did all of the tasks right away, thus scoring full points and getting the highest grade during the same day. There were some students who did only the minimum number of tasks, either right away or just before the deadline, necessary to gain enough points to obtain the lowest passing grade for the course. Interestingly, there was also a considerable number of students who, at first, completed only enough tasks to pass the course but who then, over time, completed more and more tasks, gaining high grades for the course. Furthermore, some students seemed to pick the optimal learning tasks with regards to difficulty and points awarded. This kind of “pick and mix” strategy was anticipated by the

teachers and considered a valid strategy, as it allowed the students to show their knowledge of the core topics of the course by choosing the tasks for which they would get the most points with the least amount of work. In interviews during tutoring sessions, all of the students expressed interest, engagement, and gratitude for the gamified learning tasks, considering them to be a great way of being tested on the core content of the course. Creating this kind of engagement, which fits users' different personality types, is at the core of gamification (Huotari & Hamari, 2012; Rajanen & Rajanen, 2017). Furthermore, making students' progress in learning tasks visible by showing a progress bar in their course Moodle workspace most likely contributed to the students wanting to do "just one more" learning task and ending up doing a lot of them. Feedback on progress is very important and the progress bar has been identified as best suited for learning-task progress visualisation (Cheong et al., 2014).

These experiences showed the power of learning-task gamification in practice, even in emergency conditions and even though these learning tasks were not voluntary. The importance of voluntariness in gamified learning activity has been raised in the literature (c.f. Cheong et al., 2013), but during emergency remote teaching it may not be possible to provide students with alternative learning activities or to keep the gamified learning activities voluntary. However, experiences from the COVID-19 emergency teaching will help to develop blended learning in this course in the future. For example, the gamified learning tasks that substitute for the exam will remain, as these have proven very popular among the students and a very useful way of engaging them in learning the core content. Furthermore, no students expressed any desire to have online exams, so in the future the exam will be an option for those students who want to pass the course quickly for some reason (e.g., due to exchange studies, work, or finishing the studies for graduation).

Face-to-face tutoring and supervision

Using an online meeting platform such as Zoom was an easy and apparently obvious replacement for contact supervision and tutoring sessions. However, these sessions were not attended by as many students as the classroom sessions were. Unlike the face-to-face tutoring sessions, where there were many students attending even when the sessions were voluntary and could last as long as four hours, the identical online sessions did not attract nearly as much interest.

While some of the students would pop in and out of face-to-face sessions, the majority remained during the whole session, actively working on their assignments and providing peer support to each other. During the online tutoring sessions, which were identical in time and length to the face-to-face sessions, no student stayed during the whole session. The students would come to the online session only to ask specific questions and then leave immediately. This is in stark contrast with some other reported studies, where student attendance in similar synchronous virtual classes was reported to be over 90% (Gares et al., 2020). The reasons for this discrepancy are not apparent and they should be studied further.

Therefore, the student-teacher relationship and peer support among students that existed during classroom tutoring sessions were missing from the online sessions. Having strong pre-existing connections between teachers and students has been identified as important for maintaining student engagement in emergency remote-teaching conditions (c.f. Gares et al., 2020). However, the pre-existing connection and relationship between students and teachers did not manage to sustain the expected level of student engagement in this case (c.f. Holmberg, 2005). Therefore, the aspects of student engagement and teacher-student relationship in emergency online teaching should also be addressed in future research.

Laboratory work

While usability testing done as laboratory work was previously considered impossible to convert to online mode, in emergency remote-teaching conditions the students co-operated with teachers and customers, innovating with different ways and tools to facilitate usability testing in emergency remote-teaching conditions without access to the laboratory. The general learning goals were set by the author, while the customers set their intended goals for testing. This approach proved successful, as the students themselves where the best experts of their own learning conditions, and this approach gave the students agency and empowered them to find the best ways that would work for their teams. The learning objectives of the course were fulfilled even though, initially, the conditions were thought to be impossible.

In the beginning of the COVID-19 pandemic, there was no practical advice on online lecture-making and, as such, each teacher had to manage by trial and error, trying to overcome the limitations of the hardware, software, and internet access available. The lectures for this course were provided as asynchronous video lectures delivered through YouTube. Synchronous Zoom lectures were attempted, but they did not gather enough student attendance and interest. The online videos were recorded using the PowerPoint recording function, which added recorded narration to the slideshow. This slideshow was then exported as an mp4 video file and uploaded to YouTube. However, this process took considerably more time than expected. Exporting a one-hour lecture into the mp4 format took more than one hour, as the computer available for this task was over 10 years old and was never considered fast to begin with. Furthermore, uploading each of the large mp4 video files to YouTube took more than three hours over a slow internet connection. This process tied the computer for many hours as it was recording, exporting, and uploading the lecture videos, while the uploading also reduced the speed of the internet connection to a crawl. Therefore, it was not possible to work on many lectures simultaneously, even when

there were other computers available. The impacts of, and solutions to, these kinds of technological bottlenecks in the context of emergency remote teaching should be further addressed by researchers, as currently the literature advocating the use of online video does not address the potential limits of technological means in emergency online-video production (c.f. Sherer & Shea, 2011).

Providing the lectures in the PowerPoint slideshow format with recorded voiceover would had made the file sizes of the narrated lecture slides much smaller. However, this format was completely unfamiliar to the students and it could not be accessed by mobile devices, which would have been a huge problem for students accessing the lecture videos only through smart phones or tablet computers. Putting the lecture videos on the course Moodle platform was considered, but it proved difficult to set up the playback size and quality. Furthermore, the Moodle platform had no engagement analytics to see the level of student engagement. YouTube proved to be the best platform for online lecture videos as it had the best quality and analytics, and the teacher could maintain control of the videos. However, these kinds of pre-recorded lectures can act to communicate only the core content to the students and do not facilitate dialogue in the same way as face-to-face lectures do. The medium of communication has been identified as one of the key factors in education theories (Moore, 1991). While online lectures through any kind of interactive electronic media (e.g., lecture videos on YouTube where students can post questions) permit more dynamic dialogue than, for example, lectures through television, they still require the learners to have a capability for independent meaning-making and for deciding on their own learning strategies (c.f. Moore, 1991; Hockings et al., 2018).

This accords with other studies from different fields, where, for example, face-to-face chemistry laboratory work that has been

traditionally taught with a similar kind of master-apprentice approach as in the usability testing laboratory work, has been substituted with online modules as a form of emergency remote teaching (c.f. Sandi-Urena, 2020; Gares et al., 2020). However, these studies do not recommend completely substituting laboratory work with online teaching for the long run, as practical skills and experience in laboratory work gained through practical work done together with an expert are seen as invaluable for professionals in the field. Based on the experience of providing Usability Testing outside of the laboratory during the COVID-19 pandemic, the author joins in this recommendation. Although it was possible to develop stopgap measures to complete the usability testing process, and although the student teams managed to provide valuable insights to their customers and to fulfil the overall learning goals of the course, the students will still miss the vital competencies that can be gained only through practice in the laboratory. The importance of laboratories for those in STEM disciplines has been likened to the importance of swimming pools for swimmers: while it is possible to train without a swimming pool, only the training in a pool makes one a swimmer—just like training in a laboratory is needed to gain the necessary technical, organising, and management skills (Sandi-Urena, 2020). While in some cases the hands-on laboratory work can be substituted with simulated laboratory work or remote access to laboratory facilities (Elawady & Tolba, 2009), in other cases it may be difficult or impossible. For example, it would be very difficult to substitute the hands-on laboratory work involved in learning chemistry (Reid & Shah, 2007). However, in the case of a usability-testing course, the experiences from the emergency remote teaching have already helped, and will further help, in developing the blended learning for this course in the future. For example, in the future the course will use prepared online lecture videos and flipped classroom in order to free resources for more individual tutoring. Furthermore, the course will encourage remote usability testing when the usability-testing laboratory space is occupied.

Insights on emergency remote teaching

Institutions of higher education should learn from the COVID-19 pandemic and plan for emergency remote teaching in advance, providing teachers with short-term and long-term training in online teaching in general and in emergency remote teaching in particular. The hardware and software tool requirements for teachers and students in emergency remote-teaching conditions should also be considered well in advance and prepared for. These technological requirements of infrastructure, hardware, and software have been identified in the literature as important aspects in the quality assessment of online learning (Selwyn, 2010; Shelton, 2011). The experiences from COVID-19 have shown that it can be difficult for institutions of higher education to acquire the necessary hardware, software, and online services during the emergency, when their availability is very limited and the suppliers are busy serving their existing customers.

Administrators should keep in mind teacher workload during emergency remote teaching, and they should also understand that not all teachers have powerful computers and fast internet access at home (Young, 2009). Similarly, teachers should take into account student workload and coordinate the delivery of teaching and deadlines with other teachers, so that students have a steady pace in their learning activities and deadlines. Teachers should realise that not all students have home computers, large monitors, reliably fast internet connections, skills and competencies, or quiet spaces for independent studying, especially during the first years of their bachelor's degrees.

During emergency remote teaching, teachers should consider reducing assignments, essays, and other learning tasks to ease student workload and stress, and to concentrate on the essential core content in the course. Furthermore, teachers should also consider the level of autonomy they expect from their students. Fully or mostly autonomous learning may not be suitable for all

learning styles or, for example, for first-year students who have not yet fully developed their personal learning styles and maturity for fully independent work. There have been different views on the greater responsibility that distance learning places on students for their own learning (c.f. Simonson et al., 1999; Hockings et al., 2018). Furthermore, grading in the course can be adjusted or changed to a pass/fail scale to ease teacher and student workload. Teachers should also try new methods for increasing the level of student engagement, such as the gamification of learning tasks. When possible, teachers can support different learning styles and levels of maturity by providing a set of learning tasks to choose from (c.f. Simonson et al., 1999). However, these new methods should first be carefully planned and piloted, if possible.

Due to the emergency remote-teaching mode and campus closure, there were also no more spontaneous student-teacher meetings at the office. This had an effect on thesis supervision. Previously, different kinds of informal and unplanned encounters on campus with thesis supervisors would prompt students to stop and discuss their progress and problems. Furthermore, the volume of emails from students during the COVID-19 pandemic lockdown has been lower than normal. This necessitated more direct communication and surveys from teachers to students to keep in touch with them, to remind them to be active in the courses, to create a sense of normalcy, to empower them, to give them agency, and to show them that somebody out there was interested in their learning and wellbeing. The benefits of this type of interventionist approach by teachers have been identified in the literature (c.f. Simpson, 1977; Holmberg, 2005), although its benefits and role in emergency remote teaching have not been systematically studied. Especially the first-year students who had just moved from elsewhere and who may not have had local friends, seemed to appreciate it when their teacher was com-

municating with them, as in these situations these communications also fulfilled an important social function for these students and promoted emotional involvement (Holmberg, 2005).

The limited physical and online access to university library services highlighted the importance of open-access research articles. Access to scholarly articles may become very difficult or impossible for teachers and students during limited access to the university library and its online services (c.f. Young, 2009). Therefore, using open-access articles as sources in courses proved to be a good choice since the students did not have difficulties in accessing these articles as long as they had an internet connection. The importance of open-access articles, books, and other educational resources has been also been highlighted by the literature in relation to affordability and access to higher education (Okamoto, 2013).

More research is needed into online education in general and emergency remote teaching in particular (c.f. Zhang et al., 2020). The historical example cases of emergency remote teaching had focused on local emergencies of limited duration. As the duration of the COVID-19 pandemic keeps extending, more longitudinal and strategic planning is needed for emergency remote teaching, and more research should be conducted from this perspective to provide theoretical and practical tools for teachers and administrators for offering a solid curriculum even during a prolonged state of emergency. Furthermore, the research should address the question of how to move from stopgap *emergency remote teaching* into planned and coordinated *emergency online learning*, and later into comprehensive *provisional online learning* for the whole curriculum if the emergency situation extends beyond a few days or weeks. When the emergency situation abates, the best practices in online learning developed during the emergency should be incorporated into online teaching in normal conditions and further refined as guidelines for emergency remote teaching, should there be the need for them in the future.

Conclusions

The aim of this chapter was to reflect retrospectively on the experience of converting three kinds of courses into emergency remote teaching. Furthermore, this chapter discussed the lessons learned and the challenges of emergency remote teaching in relation to 1) student engagement through the gamification of learning tasks, 2) face-to-face tutoring and supervision sessions, and 3) laboratory work done by groups of students, with hands-on work in the master-apprentice approach and with external customers.

As an autoethnographic study, this chapter is useful to peer researchers, teachers, and other stakeholders through 1) offering a better understanding of the complex situation of emergency remote teaching, 2) making it possible to anticipate future scenarios of emergency remote teaching and its pedagogical and technological possibilities and challenges, and 3) acting as a guideline for emergency remote teaching that can be learned from, and highlighting aspects such as unequal access to skills, hardware, software, and networks in the context of emergency remote teaching that might otherwise go unnoticed. Therefore, as can be expected from an autoethnographic study, this chapter contributes to research and practice and it can be both learned from and built upon (c.f. Duncan, 2004).

This chapter contributes to the research on online education by offering a comprehensive autoethnographic outlook on introducing emergency remote teaching in courses focusing on different topics, learning methods, and pedagogical goals. These empirical insights can be viewed through a variety of theoretical lenses, such as the suitability of pedagogical approaches, development of learning technologies, administration of courses and curricula, and equality in digital learning. Furthermore, this study contributes to the research by highlighting the successes, failures, and uncertainties of the emergency remote-teaching measures. This chapter presents a call for action for researchers to develop

more systematic and pedagogically effective ways to enable educators and administrators to prepare for emergency measures in their everyday teaching planning, to transition the teaching immediately into emergency remote teaching, and to subsequently transition into more pedagogically viable teaching and learning beyond immediate stopgap measures. The learning theories, processes, and related factors in emergency remote teaching should be critically assessed and further improved to take into account the experiences from the COVID-19 pandemic in order to better prepare for the next emergency. Furthermore, researchers should also provide theories and processes for the transition from the long-term online teaching mode resulting from the COVID-19 pandemic back into normal teaching mode, so that this eventual transition can be as smooth as possible for educators and students.

This chapter contributes to online education practices and helps practitioners in higher education by introducing first-hand practical experiences, lessons learned, and identified best practices for rapidly turning courses into emergency remote teaching, for making sure that the teaching and learning continue in the online environment in any way possible after normal teaching mode has been abruptly suspended, and for keeping students engaged and empowered. These insights help the practitioners to better understand emergency remote teaching as a complex issue. Furthermore, in the event that the emergency is prolonged, this study highlights the need for transitioning toward more refined, systematic, and structured emergency online learning after the initial challenges of emergency remote teaching have been overcome. Emergency online learning should go beyond immediate stopgap measures once the basic organization for emergency teaching and learning has been set up; it should take into account different learning styles as well as the possibilities and limitations of the available technology and pedagogic methods. If the emergency is further prolonged, as was the case during the

COVID-19 pandemic, courses should move into even more systematic provisional online learning, where the pedagogic practices and workloads are systematically analysed at the curriculum level.

Furthermore, based on these experiences and lessons learned, some general guidelines for emergency remote teaching can be identified for both practical use and as a source for further research:

1. Institutions of higher education should make a clear decision on moving to emergency remote teaching in all organizational levels. The creation of an effective transition to emergency remote teaching is not possible without explicit support of all organisational management and staff (c.f. Aguliera & Nightengale-Lee, 2020).
2. Administrations should provide immediate guidelines and management support to teachers, students, and support staff. Any decent guideline that is provided immediately when crisis has emerged is much better than a carefully planned guideline that is provided too late, after the stakeholders already had to solve the emerging problems in their own ways (c.f. Trust & Whalen, 2020).
3. IT support should provide a supply of computers, monitors, headphones, and cameras to teachers who need them (c.f. Trust & Whalen, 2020). Such support should also be provided to marginalised students, if possible. Emergency remote teaching is not possible if there is a lack of vital hardware.
4. IT support should provide access to services in the organisational network and increase the number of proxy connections available. Services in the organisational network might not be accessible from outside of the organisation's premises and existing proxy connections will easily be overwhelmed by increased demand (c.f. Young, 2009).

5. In the beginning of an emergency, teachers should provide immediate communication and core content to students to alleviate stress and to create a feeling of normalcy (c.f. Holmberg, 2005). Because emergency situations can be as stressful for students as they can be for teachers, and can disrupt their learning routines and social contacts, maintaining as much normalcy as possible would help the students transition from the normal teaching mode to emergency remote teaching.
6. Synchronous virtual classes may foster student-teacher relationships, discussions, peer-to-peer support, and sense of unity, but if student attendance level is low, teachers should consider asynchronous lectures and other forms of virtual classes. Low attendance might be due to students' confusion regarding teaching times in the transition to online teaching, to conflicts in teaching times, to excessive workloads being set on students at any given time, to the level of stress experienced by the students, or to students not valuing the virtual classes as highly as face-to-face classes.
7. Teachers should coordinate among courses so that the students are not overloaded with deadlines for course deliverables. While normal teaching is usually coordinated so that the workload for students is constant and manageable, in emergency remote teaching this coordination is more difficult while the workload already becomes higher due to the conditions and challenges of online learning (c.f. Zhang et al., 2020).
8. There should be one place where all teaching activities and course deadlines are made visible for the teachers and the students, to act as reminders and tools for learning planning. This would help both teachers and students in their planning, to avoid the overlapping of teaching times and to manage the student workload.
9. Teachers should take into account different learning styles and accessibility issues and should try to minimise

inequalities of access to online materials (c.f. Selwyn, 2010). Differentiated teaching and learning should be considered during prolonged emergency remote teaching as well (c.f. Tulbure, 2011).

10. Students are the best experts of their own learning conditions and styles. In emergency remote-teaching conditions, they should be given more agency and, if they have the skills and maturity for autonomous learning, be empowered to develop their own ways of completing the learning activities. Teachers do not know the limitations in individual students' skills, in their technological, social, and physical learning conditions, or in their personal learning styles, so during emergency remote teachers should be more flexible and let the students suggest ways of doing the learning that are best for them.
11. However, teachers should not think that all students are able to carry out completely independent learning and should also remember the students who require more direct supervision and routines as part of their learning styles (c.f. Hockings et al., 2018). While giving students more agency and empowerment, teachers should also consider students requiring more hands-on supervision.
12. Administrators and teachers should plan and coordinate for prolonged emergency, to be able to move from temporary stopgap measures for *emergency remote teaching* to more pedagogically well-planned *emergency online learning,* and later to comprehensive *provisional online learning* across the whole curriculum. The teaching and learning should be systematically planned and improved until the emergency disappears and the teaching mode can be switched back to normal.

Overall, the chapter aimed to show researchers and practitioners that, for example, 1) gamifying online courses works to motivate students also during pandemic lockdown measures when it takes into account student-centeredness, different learning styles, and

good usability, 2) moving voluntary face-to-face tutoring sessions to online remote sessions may decrease attendance substantially, and therefore teachers should be prepared to provide asynchronous sessions when necessary and to motivate students to attend online tutoring sessions, and 3) it is possible, though difficult and maybe risky, to convert a hands-on laboratory course to the online teaching mode without giving up any of the pedagogic goals. Furthermore, one of the goals of this chapter was to encourage those teachers who have considered it impossible to teach this kind of course online by showing that it can be done, both in emergency conditions and in normal conditions, as long as it is planned well in advance and the necessary support and resources are given by the administration.

This study has some limitations that must be deliberated when considering its generalisability and results. First, there are no detailed field notes from the start of the emergency remote teaching due to the suddenness of the transition and the greatly increased workload. Therefore, the details of the timeline and of how courses were initially transitioned to emergency online teaching had to be pieced from various sources such as memory, emails, written course instructions, discussions with students and colleagues, as well as student feedback. Emergency situations provide good cases to learn from, but by their nature they do not allow comprehensive autoethnographic data collection. Second, while the courses in this retrospective reflection cover different kinds of courses in the field of Information Systems, there are certainly many other topics and types of courses in the field in that were not addressed in this study, not to mention courses in other disciplines. For example, laboratory work in chemistry would be more difficult to move into emergency remote teaching and would require different approaches than those presented in this study (c.f. Reid & Shah, 2007). Third, the context, local practices, and legislation also have an effect on emergency remote teaching. For example, in some disciplines, certain institutions of higher education or countries mandate a set

amount of face-to-face teaching or learning through work practicums.

The author hopes that the experiences and insights in this chapter will serve higher-education teachers, researchers, students, and administrators alike with regard to emergency remote teaching. As long as certain conditions are met—that is, the workload of the teachers is managed also during emergency measures; students are kept engaged with interesting and gamified learning activities; the emergency remote teaching is planned and conducted for agency, empowerment, student-centeredness, pedagogic goals, accessibility, and equality; and the differences of students are taken into account with regards to the technologies, capabilities, and skills they have—the emergency remote teaching could be more than just a stopgap measure and could be something to build on, no matter what kind of emergency we face or how long it lasts.

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